

Physics 11 Outline

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Principle Text: Merrill, Physics; Principles and Problems

Online Lab Manual: [Physics 11 Laboratory Manual](#)

<http://physics-pages.wikispaces.com/file/view/LAB+MANUAL+Physics+11.doc>

Why study physics?

1. Physics 11 is a [problem solving](#) based course. When faced with problems in all areas of life, having skills to systematically analyze and creatively solve the problems is indispensable. Mathematical models are derived from data and applied in most areas of study, from social studies to economics to the plans for a small business.

2. Physics is the fundamental science. Therefore:

a) True understanding of other sciences requires an understanding of the underlying laws. Much of chemistry and biology can be understood using electrostatics and thermodynamics.

b) Many new technologies are derived from applying physics.

3. It is fun! It is like a game where you have clues that you must interpret and piece together a solution.

These are the topics we may cover this year. We are transitioning into a new curriculum with less topics, so I may cut some topics and add circuits at the end, time/interest dependent. As you write notes and complete homework, number all the pages in your binder and write the page numbers beside each topic on this sheet. This simplifies binder checks and studying.

Topic	Pre-reading in Text	Binder Index of Student Notes and Homework	Lab Manual or Worksheet
Introduction	Chapters 1 and 2	Fill in page numbers for your binder.	
What is Physics?	p3-9		traffic
Scientific Measurement	p14-25		density
Patterns in Data	p26-34		graphing
Kinematics (describing motion).	Chapters 3 and 4		

Position and time	p40-50		smooth motion
Velocity and time	p51-57		moving man
Acceleration	p63-70		cart on ramp
Displacement and time	p71-80		video analysis
Forces	Chapter 5		
Newton's Laws	p87-93		
Weight and friction	p93-99		sliding
Net force	p100-103		cart and pulley
Elastic and Gravitational Forces	Chapter 8		
Gravitational Force	p161-165		
Elastic Forces	Classroom notes		Hooke's Law
Momentum	Chapter 9		
Momentum and impulse	p175-180		
Conservation of momentum	p180-191		collisions
Work and Energy	Chapters 10 and 11		
Definition of work and energy	p197-202		
Power	p202-204		running stairs
Mechanical work	p204-211		
Types of energy	p217-226		
Conservation of energy	p227-235		elastic collisions
Thermal Energy	Chapter 12		
Temperature	p241-247		
Heat	p247-255		heat capacity
The Atom	Chapter 28		
History of atomic models	p573-584		Bohr
Present model of the atom	p584-585		Laser
Nuclear Physics	Chapters 30 and 31		
Radioactivity	p615-624		Isotopes and dice
Nuclear force	p639-643		
Using nuclear energy	p643-653		
Wave motion	Chapter 14		
Types of waves	p287-294		Waves on Spring

Interference and diffraction	p294-302		
Sound waves	Chapter 15		
Doppler shift, pitch and loudness	p307-313		
Resonance, standing waves	p313-324		Speed of Sound
Light waves	Chapter 16		
Nature of light	p329-336		
Light and matter	p336-342		
Ray Optics	Chapter 17		
Reflection and refraction	p347-354		
Applications of Snell's Law	p356-361		refraction
			Playland Trip
Mirrors and Lenses	Chapter 18		
Plane mirrors	p367-369		pinhole camera
Curved mirrors	p369-378		
Lenses	p378-385		telescope
Interference Patterns	Chapter 19		
Single slit and double slit interference	p392-398		
Diffraction gratings	p400-402		interference
Special Relativity	Handout		
Circuits	Chapters 22 and 23 p446-486		Series and Parallel Circuits

Expectations

Students must attend and fully participate in all classes. When absent for any class, a signed note from a parent or guardian is required to be signed by all teachers and submitted to the office. Students missing tests or quizzes will receive a 0 unless I get a signed note. Late students will stay after class or after school to discuss punctuality. Inappropriate use of phones or calculators will result in confiscation until the end of the day, or the end of the week for repeat offenders.

Marks will be awarded as follows: up to 10% for homework/binder checks and participation, up to 25% for laboratory reports, presentations and special homework, up to 10% for quizzes and up to 65% for tests. Copying, or letting another student copy test or laboratory work, will result in a 0 on that paper and a meeting between parents and the administration. This includes copying data

from your lab partner at a later date; everyone must record the data as it is collected. Late assignments will be assessed a 20% penalty initially and a 50% penalty when very late.

There will be a final exam worth 20% of the year, while the term marks are weighted term 1 at 25%, term 2 is 25%, term 3 is 30%.

Have a one inch binder for physics and divide it into three sections. One section for notes and handouts, another for homework and labs and one section for returned tests and quizzes. Keep the homework and lab section clearly labelled and in chronological order, as it will be checked in class at midterm and endterm.

Students are expected to bring their own text and supply a sturdy cover, their lab manual, a three ring binder, a large supply of paper, a scientific or graphic calculator, and millimetre graph paper. Graph paper can be bought at a stationary store, printed out using a table or borrowed and photocopied. Students who have difficulties carrying their books to class can join me in the weight room after school for strengthening exercises.

Students interested in peer tutoring, being tutored by peers, or working on enrichment should talk to me after class or send me an e-mail. Being a tutor can give you service hours, help you deepen your understanding and is fun.

I don't check my e-mail all the time, so do not leave questions to the last minute. Students who help others will get participation marks.

Do homework the night it is assigned and see me after school the next day if you have problems. The next class we will have some time for questions but will move on to the next topic.

Check out <http://physics-pages.wikispaces.com/Help+links> for physics help ideas.